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**Abstract**

The performance of a Single Code Word (SCW) design with low complexity MMSE receiver & rank prediction is similar to the Multiple Code Word (MCW) design with successive interference cancellation (SIC). A method of rank prediction comprises calculating MIMO channel matrices corresponding to layer transmissions for each tone, calculating signal-to-noise ratios (SNRs) for each tone based on the MIMO channel matrices, mapping the SNR for each tone to generate effective SNRs for each layer transmission, calculating additive white Gaussian noise (AWGN) capacities corresponding to the effective SNRs and maximizing an over-all spectral efficiency based on the AWGN capacities; and selecting a rank based on maximizing the over-all spectral efficiency.